CERTIFICATE OF TRANSMISSION

I hereby certify that I am transmitting this correspondence to the Commissioner for Patents at the United States Patent and Trademark Office by telephone facsimile to telephone number (571) 273-8300 on June 30, 2006.

By: J. Michael Neary — June 30, 2006
J. Michael Neary — Date: June 30, 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Gerald J. Julien	)	Group A.U. 3618
Serial No.:	10/505,356	)	Examiner: John Daniel Walters
Filing Date:	August 19, 2004	)	
Title:	Nitinol Ice Blades	)	

Declaration under Rule 132

June 30, 2006

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

1. My name is Susan Buchanan. I am President of Triumph Sport, Inc., holder of a license under the above-identified application. This is my affidavit in support of the unobviousness of the Nitinol Ice Blades claimed in this application.

2. The license under this application was executed on March 24, 2003 and I immediately began promoting Nitinol skate blades. My approach was to first arrange for tests of the skate blades by expert skaters to collect data on the superior performance of the blades on ice and the benefits they gave to the skaters, and then to use that data to convince the large manufacturers of skate blades to adopt Nitinol skate blades in their product lines.

3. I discovered that top athletes are often very hesitant to make any equipment changes due to risk and often superstition, but I was finally able to arrange for testing by some expert skaters. They reported that the Nitinol skate blades performed quite differently from conventional skate blades. Although they were faster and glided further

on the ice, the feel of the Nitinol skate blades was different and it took time for them to become accustomed to the way the blades felt while maneuvering on the ice. However, after they had become accustomed to the skates with Nitinol blades, the skaters liked the new skates very much and were reluctant to return to using skates with conventional blades.

4. After additional testing, I now realize that Nitinol blades do indeed have a different feel on the ice. Some skaters have noted that they needed to get used to the feel before really being able to push the blades. Because of Nitinol's superior glide characteristics, skaters sometimes feel that the blades do not have a sharp edge (the feel of Nitinol blades is similar to the feel of steel blades with dull edges). However the edge on the Nitinol skate blades being tested was, in fact, very sharp. Players, who switched back to steel blades after skating on Nitinol, noted that the steel blades felt stiff and hard.

5. After extensive testing I felt I was ready to offer the Nitinol skate blades to the major manufacturers of ice skates. I confidently expected that, after the manufacturers' testing confirmed my own test results, that the manufacturers would eagerly seek rights to manufacture and sell the new Nitinol skate blades.

6. CCM, one of the biggest ice skate manufacturers in the world, agreed to test the Nitinol skate blades. They performed load tests on the blades and found that blade torsion resistance (resistance to bending/twisting) was 2.8 times less than steel runners. Similarly, the load resistance in the Nitinol blades for the three point bend test was 2.8 times less. These mechanical characteristics are probably the reason why the blades feel differently on the ice to the skater.

7. CCM also noted that Rockwell hardness of the Nitinol blades was 17.5 points less and, despite their lower hardness, that it was more difficult to sharpen the blades, even though they do not need to be sharpened as often. CCM noted that the Nitinol tends to clog the wheel abrasive more quickly than steel.

8. CCM's testing on the ice was insufficient in duration for the skaters to become accustomed to the feel of the new blades, so they were unable to gain the confidence to push them hard enough to begin to appreciate their benefits. Some players felt a lack of adherence when standing in a neutral position, probably because of the superior glide or low coefficient of friction with the ice.

9. As a result of its laboratory testing and short skating trials, CCM concluded that Nitinol skate blades did not afford any significant benefits and they declined to pursue the matter any further.

10. After that disappointing experience, and some others that were even more disappointing, I decided that the best way to gain acceptance would be to conduct much

more extensive field trials with other expert skaters. I know, from the testing I have done, that after a skater becomes accustomed to the feel of the Nitinol skate blades, the skater will begin to gain the following benefits:

a. Shorter stopping distance. The Nitinol skate blades exhibit sharper, shorter, more crisp stops. The blades cut deeper into the ice without the bouncing or chopping exhibited by steel blades. Tests have shown the stop distance—as shown by the length of the scrape on the ice—to be significantly shorter with the Nitinol blades versus the steel blades. Also, the ice scrape for the Nitinol blades left a smooth, continuous mark, whereas the scrape for the steel blades showed a broken, choppy mark consistent with the blades bouncing off of the ice. This bouncing causes an increase in the stop distance with steel blades versus Nitinol blades.

b. Sharper, tighter, and more effortless turns. The lower modulus ("torsion resistance") that CCM considered to be a disadvantage, is actually an advantage. Nitinol is a shape memory alloy that is designed to flex and return to its neutral position. The ability to flex is an advantage for the Nitinol blades as skaters make turns. Through the course of a turn, the skate blade flexes with the pressure of the turn to allow for more edge length to be in contact with the ice throughout the turn. It feels different to the skater initially, but once the skater is accustomed to the feel, he is able to make sharper, tighter, and more effortless turns.

c. Improved glide and speed. After becoming accustomed to the Nitinol skate blades, skaters are able to skate as fast or faster with less effort and to glide farther and faster with no more effort.

d. Edge retention. Contrary to all expectations, the Nitinol blades, even though they are not as hard as conventional steel blades, last six times longer before they need to be resharpened. In order for steel blades to maintain their edges, they must be processed to a high Rockwell hardness. This makes the blades stiff, inflexible, and prone to breakage. Also, the carbon used to increase the hardness in steel promotes corrosion – a key factor in edge loss. Since Nitinol is very erosion resistant and completely non-corrosive, Nitinol blades are very durable and maintain their edge without a high Rockwell hardness and without sacrificing flexibility.

e. Less time sharpening blades. The Nitinol blades need to be sharpened on average 6 times *less* often. However, they do require more time and effort to sharpen - particularly on the initial sharpening, as the blade hollow needs to be ground out. Using the grinding wheel specified by the inventor, Nitinol blades take approximately twice as long to sharpen than steel blades (*estimated 10 mins vs. 5 mins*). Since the Nitinol blades

need to be sharpened 6 times less often, equipment managers spend only ⅓ the time sharpening Nitinol blades versus steel blades.

f. Sharpening effort. CCM noted that the Nitinol tends to clog the wheel abrasive more quickly than steel. Sharpeners do need to dress the grinding wheel more often (i.e., pass a diamond bit over the grinding surface to expose fresh abrasive). However, once the sharpener gets accustomed to working with the Nitinol, the sharpening process and effort is comparable to steel blades.

11. My plan now is to arrange large scale testing of the Nitinol skate blade by hockey teams and allow the teams to create the real world proof that Nitinol skate blades are indeed vastly superior to conventional steel blades, contrary to the opinion of the experts at the skate manufacturers who considered the product. I believe that demand from the top hockey players and teams as well as amateur hockey skaters will eventually convince these manufacturers that they were wrong and that they will then be willing to negotiate a license.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,

Susan Buchanan

Susan Buchanan, President
Triumph Sport, Inc.